Art Unit: 1631

II. AMENDMENT TO THE CLAIMS

COMPLETE LIST OF CLAIMS THAT ARE OR HAVE BEEN BEFORE THE OFFICE AFTER ENTRANCE OF THE AMENDMENTS MADE HEREIN

The following claims constitute a complete list of claims that are or have been before the office after entrance of the amendments made herein. Amendments to the claims are indicated in accord with Revised 37 C.F.R. §1.121. In accord with such regulation, the listing of claims set forth below replaces all prior versions, and listings, of claims in the application:

--CLAIMS AS PENDING IN THE APPLICATION WITH AMENDMENTS MADE HEREIN START ON NEXT PAGE--

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1.-12. (Canceled)

13. **(CURRENTLY AMENDED)** The method of claim [[38]] 44, wherein the step of producing a rare cell image mask signal further comprises: analyzing a histogram of luminance values of the color image signal representing the rare cell image; selecting for further processing, rare cell signal points having a luminance value above a last valley preceding a last peak of the histogram; and applying to the selected signal points a closing filter, excluding areas not fitting a predetermined size criterion, and applying a hole filling function.

14. **(CURRENTLY AMENDED)** The method of claim 13, wherein the step (vi) of enhancing creating a selected rare cell signal further comprises: selecting for further processing, signal points having a saturation value above a first valley following a first peak of the histogram; applying to the selected signal points a closing filter, applying a hole filling function, applying an erosion filter, and excluding areas including comprising a border of the image, an erosion filter is applied, and applying a thick filter is applied, producing enhancing the selected rare cell signal.

15. **(CURRENTLY AMENDED)** The method of claim 14, wherein the step (vi) of enhancing creating a rare cell signal further comprises: selecting for the rare cell signal, signal points coinciding with the selected rare cell signal, among a cluster of signal points lying within a predetermined size range, the cluster of signal points also having a hue value lying within a predetermined hue value range.

16. (PREVIOUSLY PRESENTED) The method of claim 15, further comprising: processing substantially only rare cell areas to generate a biologically identifying signal.

17. (CURRENTLY AMENDED) The method of claim 16, further comprising: acquiring an image of the body fluid or tissue smear; detecting in the acquired image the biologically identifying signal; and recording presence of the biologically identifying signal when coincident with a rare cell area from the rare cell biological ~~data set or~~ criteria.

18. (PREVIOUSLY PRESENTED) The method of claim 16, further comprising: acquiring an image of a rare cell area of a body fluid or tissue smear, the rare cell area defined by the rare cell data set; and recording presence of the biologically identifying signal in the rare cell area.

19. – 39. (CANCELLED)

40. (CURRENTLY AMENDED) The method of claim [[38]] 44, wherein the digitized color image signal is derived through a computer-aligned plurality of microscope objectives from a large field sample.

41. (CURRENTLY AMENDED) The method of claim [[38]] 44, wherein the rare cell is present at a concentration of 0.001%, 0.0001%, 0.00001%, or 0.000001%.

42. – 43. (CANCELLED)

44. (NEW) A computer-controlled method for rare cell image identification, comprising the steps of:

(i) isolating a sample comprising cells from a body fluid or tissue;

(ii) fixing said sample comprising rare cells in cell aggregates (blobs) in a monolayer on a substrate;

(iii) precisely locating a rare cell candidate in said blob and continuously recording x, y and z- coordinates thereof with a computer-controlled mobile microscope system searching said optical field starting from an initial position on an optical field of said monolayer;

(iv) receiving a color image signal of said rare cell candidate in said monolayer sample;

(v) computer-implemented transforming the color image signal from a native color of Red, Green and Blue (RGB) to a binary quantized Hue, Luminescence and Saturation (HLS) signal;

(vi) enhancing detection of said rare cell color image by applying different

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computer implemented HLS signal masks with selectively limiting pixel values;

(vii) identifying said rare cell candidate by automatically measuring pre-set criteria

in terms of size of a cell or cell nucleus, characteristic cell markers; and

(viii) automatically locating by a selective tag dispensing system which is

programmed to tag selectively said rare cell *in situ* to determine biological criteria

comprising genomic variation, mutation, or chromosomal aberration.

45. (NEW) A computer software product comprising a computer-readable storage medium

containing a sequence of computer-directed steps to identify a rare cell image, in accordance

with claim 44.

46. (NEW) The computer-controlled method for rare cell image identification, wherein the x-y-

coordinates are a planar coordination component, and the x-z coordinates are a height/depth

coordination component, the components serving to locate rare color images and blobs.